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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHUNG, JI YONG DAVID	
ART UNIT	**PAPER NUMBER**
2143	

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,916	FEUERSTRAETER ET AL.	
	Examiner	Art Unit	
	Ji-Yong D. Chung	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30-47* is/are rejected.

7)☒ Claim(s) *44, 46, and 47* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

JPC

DETAILED ACTION

Response to Remarks

1. Applicant's arguments and amendments filed on September 9, 2005 have been carefully considered. However, the instant application is not deemed to be in condition for allowance.

Applicant has presented new claims 30-47 in place of claims 1-29, which now stand cancelled.

Allowable Subject Matter

2. **Claims 44, 46 and 47** are allowable over the prior art of record, if they are rewritten in independent form to include the limitations of the claims from which they depend.

Claim Suggestions

3. **Claims 30 and 39**, if rewritten to avoid the following issue, which is explained below, would be allowable.

New independent claims 30 and 39 cite "aggregating multiple media controllers." As discussed below, "link aggregation" (or "channel aggregation") is shown in Kalkunte et al (Pat. No., 6,973,031, Kalkunte hereinafter).

Traditionally, an administrator can perform channel aggregation (port aggregation) in a system by issuing proper commands to the system (e.g., Solaris). This is distinguished from the

features described in the instant specification, which indicates that the system (e.g., a host that has the interface cards), rather than an administrator, automatically performs the link aggregation based on information given by channel probes.

However, the applicant does not claim the distinguishing feature precisely. The claims can be interpreted to read on the traditional port aggregation, as depicted in Kalkunte.

If the distinguishing features are delineated clearly in the claims, the claims would be allowable over the prior art of record.

4. **Claim 43**, if rewritten to avoid the following issue described below and to incorporate the feature discussed above with respect to claim 30 and 39, would be allowable.

Independent claim 43 speaks of the control logic that can establish "10 gigabits per second (Gb/s) physical channel" or a "sub-10Gb/s virtual channel." The limitations can be read in two ways. (1) One can interpret the phrase to mean that the controller has the ability to establish both 10 gigabits per second channel and sub-10Gb/s virtual channel, but one at a time. (2) It is also possible to read the phrase to mean that the controller has the ability to do one of two things. Establish either 10 gigabits per second channel or sub-10Gb/s virtual channel.

The Office is inclined to read the claim in accordance with the latter interpretation. Accordingly, the limitation would read on any device hat has the ability to establish a sub-10GB/s virtual channel.

If the applicant (1) indicates, in Remarks of the future amendment, that the former interpretation is the correct one or amends the claim to clearly force the former interpretation,

and (2) incorporates the feature discussed above with respect to claim 30 and 39, claim 43 would be allowable over the prior art of record.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. **Claims 30, 31, and 39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Feuerstraeter et al (Pub. No. 2003/0058894, F'894 hereinafter) in view of Kalkunte et al. (Pat. No. US 6,973,031, Kalkunte hereinafter).

With regard to **claim 30**, F'894 discloses the steps comprising:

identifying a communication capability of a remote device [See paragraph 0063 and 0064, indicating that the remote communiation capability is detected];

determining whether a data rate of the virtual sub-channel is compatible with the communication capability of the remote device [See paragraphs 0037-0043. In F'894, it is determined what device capability is given for the network. Network contains a "remote device"];

reducing the data rate of the vitual sub-channel if the data rate is not compatible with the communication capability of the remote device [See paragraphs 0037-0043. In F'894, the data rate is selected for either WAN or LAN.

F'894 does not show, but Kalkunte shows an arrangement with

dynamically aggregating, if necessary, multiple media access controllers (MACs), based at least in part, on the identified communication capability of the remote device, *to establish a virtual data-sub channel within a physical data channel for communication between a communication interface and the remote device*. See from line 52-62. in column 1. See Figs. 1 and 2.

As shown, link aggregation combines ports (and therefore MACs), to establish a "virtual data-sub channel" ('a single logical communication channel') within a physical data channel for communication between a communication interface and the remote data. See lines 52-62, column 1, Figs. 1 and 2. See lines 46-52, column 4.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use link aggregation, as explained in Kalkunte, because the use of the technique 'facilitates the transmission of information' (See lines 52-55, column 1). That is, the use of the technique allows one to speed up the transmission using lower rate components.

With respect to **claim 31**, F'894.shows the communication link is an IEEE 802.3ae compliant communication link, with a data channel of 10 gigabits per second (Gb/s). See paragraph 031 and 032.

Claim 39 substantively incorporates the limitations of claim 30, but in computer software form. The reasons for the rejection of claim 30 apply to claim 39.

7. **Claims 32-36, 40, 41, and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over Feuerstraeter in view of Kalkunte, and further in view of Feuerstraeter (Pat. No. 6,169,729, F'729 hereinafter).

With respect to **claim 32**, neither F'894 nor Kalkunte shows, but F'729 shows:

sending a capability request [see from line 51, column 11 to line 7, column 14]; and

receiving a response to the request denoting at least the communication capability of the remote device [see from line 51, column 11 to line 7, column 14. Also see Fig. 4]. There is an exchange of information about the transmission and reception capabilities in the auto-negotiation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine F'729's auto-negotiation feature with F'894, because the auto-negotiation would allow the adjustment of the transmission and reception rate of the interface to below its maximum, if the remote device cannot communicate as rapidly as the local one.

Note that F'894's method for identifying the ability of remote device needs to be included in the combination in addition to F'729's auto-negotiation step, because 802.3ae does not support auto-negotiation.

With regard to **claim 33**, F'729 discloses identifying a communication capability of the remote device, comprising:

receiving an indication from the remote device denoting at least the communication capability of the remote device [see auto-negotiation, lines 51-65, column 11].

With regard to **claim 34**, F'729 teaches "the indication" that also denotes a *processing capability of the remote device*. The Next Page processing capability of F'729 is *the processing capability of the remote device* (see from line 66, column 12 to line 14, column 13)].

With regard to **claim 35**, F'729 teaches *that the communication capability of the remote device is obtained by the communication interface through a negotiation process*. [See auto-negotiation, from lines 51-65, column 11].

With regard to **claim 36**, F'894 and F'729 show

establishing a virtual data sub-channel within a physical Ethernet data channel comprises establishing a sub-10 gigabit per second (Gb/s) virtual data channel within a physical 10Gb/s data channel. F'894 does not teach the step of *establishing a sub-10Gb/s virtual data channel* within a physical 10Gb/s data channels. F'894's speaks of a 10Gb channel and a sub 10 Gb channel, however.

What is missing from the F'894, then, is a step for adjusting speed of one's communication device such that it transmits and receives below its capacity (10 Gb). F'729 teaches the missing step. F'729 teaches an auto-negotiation feature/step. Auto-negotiation feature/step allows devices to communicate at the highest available rate of a device below its maximum capacity, which would be sub 10 Gbs.

Claim 40 substantively incorporates the limitations of claim 36, but in computer software form. The reasons for the rejection of claim 36 apply to claim 40.

F'894 teaches part of claim 40's limitations, how a link maybe established *based on the identified communication capability of the remote device*. F'894's subject matter is directed to tapping communication line at signal level to determine the communication speed of remote devices and to adjust his device's communication rate.

Claim 41 substantively incorporates the limitations of claim 34 and 35, but in computer software form. The reasons for the rejection of claim 34 and 35 apply to claim 41.

Claim 43 substantively incorporates the limitations of claims 30 and 36, but in apparatus form rather than in method form. Claim 43 cites

a control logic, to identify a communication capability of a remote device communicatively coupled with the apparatus through a communication link [See the discussion of claim 30. "A control logic" is merely a means to identify the communication capability in clai 30];

a plurality of media access controllers (MACs), responsive to the control logic, aggregated by the control logic to establish a 10 gigabit per second (Gb/s) physical channel or a sub-10 Gb/s virtual channel within the 10 Gb/s physical channels to facilitate communication from the apparatus to the remot device based, at least in part, on the identified communication capability of the remote device, wherein the control logic further determines whether a data rate of the established channel is compatible with the communication capability of the remote device

and cause the aggregation of MACs to reduce the data rate of the established channel if the data rate is not compatible with the communication capability of the remote device. See claim 30 and claim 36 for the substantive discussion of the limitation.

8. **Claim 37** is rejected under 35 U.S.C. 103(a) as being unpatentable over Feuerstraeter in view of Kalkunte, and further in view of "Comparison of Rate Control Methods," by Howard Frazier of Cisco (Frazier, hereafter).

With regard to **claim 37,** neither Feuerstraeter nor Kalkunte shows, but Frazier shows *wherein reducing the data rate of the virtual sub-channel comprise inserting idle control elements between substantive frames of a data stream of the virtual sub-channel.*

See page 9, where Frazier describes 802.3x based frame rate control. 802.3x flow control compliant devices have MACS to insert IDLE frames. IDLE frames do not carry information. The rest of the frames carry real information. All this would occur in the virtual channel. The devices determines when to insert the IDLE frame; that is it "assigns" the time slots to carry substantive and non-substantive content.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use further rate control as described in Frazier with F'894's system, because the different payload rates for WAN/PHY and UniPHY require the pacing mechanisms to establish compatibility, as explained on page 3 of Frazier titled "Why Do we Need Rate Control."

9. **Claims 38, 42, and 45** are rejected under 35 U.S.C. 103(a) as being unpatentable over F'894, Kalkunte, F'729, and further in view of "802.3ae 5 Criteria" (which was referenced by "Chair's Introductory Remarks" at IEEE 802.3 10Gb/s Task Force July 2000 Plenary Week, July 11-12, 2000) and "XAUI/XGXS Proposal" presentation at IEEE 802.3 10Gb/s Task Force May 2000 Interim Meeting Plenary Week, July 11-12, 2000.

With regard to **claim 38**, F'894 and F'729 do not show *aggregating if necessary one or more 1Gb/s MAC(s) or a 10 Gb/s MAC with which to establish the virtual channel; and dynamically multiplexing the lGb/s MAC(s) to an appropriate channels of an attachment unit interface (AUl).* Kalkunte discloses in Fig. 2 multiple MACs with which to establish the virtual channel and dynamically multiplexing them. Note that Kalkunte does not use the specific bandwidth specified in the claim for each MAC.

At this point, in order to make the prima facie argument that claim 38 should be rejected under 103(a), the Examiner must show the reason why one would select 1Gb/s and 10 Gb/s MACs.

The reason for the selection of the size of bandwidth of 1Gb/s flow from further consideration of the compatibility question: what 802.3 compliant sub-10Gb/s data channel interface bandwidths are most commercially popular and would likely must co-exist (i.e., compatible) with to 802.3ae?

It would have been obvious to one skilled in the art at the time of the invention to choose 1Gb/s channels, because that is the next fastest IEEE 802.3 standard for Ethernet. If anyone

were to upgrade their Ethernet interfaces, those would most likely be upgrading from bandwidths in multiple of 1Gb/s.

Claim 42 substantively incorporates the limitations of claim 38, but in computer software form. The reasons for the rejection of claim 38 apply to claim 42.

Claim 45 substantively incorporates the limitations that are similar to those in claim 38, but in slightly different wording and in apparatus form. The reasons for the rejection of claim 38 still apply to claim 45.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ji-Yong D. Chung whose telephone number is (571) 272-7988. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ji-Yong D. Chung
Patent Examiner
Art Unit: 2143

WILLIAM C. VAUGHN, JR.
PRIMARY EXAMINER

JDC